

REMARKS

This Amendment is submitted in response to the Office Action mailed November 14, 2008. Claims 1, 4-6, 9, 12-14, 17-24, 29 and 33 were pending in this application. With this Amendment, claims 1, 20 and 29 are amended. Claims 4, 21 and 33 are cancelled. Thus, the currently pending claims before the Examiner for consideration are claims 1, 5, 6, 9, 12-14, 17-20, 22-24 and 29.

On page 3 of the Office Action, claims 1, 4, 6, 9, 12, 14, 17, 29 and 33 were rejected under 35 USC § 103(a) as being unpatentable over Chen, U.S. Patent No. 5,751,905 in view of Huang et al., "Whistler: A Trainable Text-To-Speech System," 1996. Independent claims 1 and 29 have been amended to more particularly recite that the claimed system models syllables having an initial part and a final part, wherein the final part comprises a first portion/phone corresponding to a first relative pitch and a second portion/phone corresponding to a second relative pitch, wherein the different levels of pitch comprise at least two categorical levels, and wherein each portion/phone has a categorical level associated with it. All references to the pending application will refer to the published version at U.S. Patent Publication No. 2005/0159954. As illustrated in FIG. 5 of the pending application and discussed in ¶ [0054], Mandarin Chinese, an exemplary tonal language, includes five different tones, four of which are illustrated in FIG. 5. The fifth tone is a neutralization mode of the other four. As the Office Action points out, Chen teaches that a pitch contour varies with time. This can also be seen in Applicant's FIG. 5.

As shown in FIG. 5, a pitch contour is a curve or line representing the variance of pitch over time. Chen's

"high" tone corresponds with Applicant's "tone 1" of FIG. 5; Chen's "rising" tone corresponds with Applicant's "tone 2." Chen's "low" tone corresponds with Applicant's "tone 3." Chen's "falling" tone corresponds with Applicant's "tone 4." Chen's "untoned" version corresponds with Applicant's "tone 5," not shown in FIG. 5 but discussed as a neutralization mode of the other tones. However, these teachings of Chen do not render obvious the claimed invention, wherein a model of the final part of a syllable is broken up time-wise into a first portion and a second portion, and wherein a discrete categorical level of pitch is assigned to each of the temporal portions.

The discussion in Applicant's ¶ [0050] illustrates an advantage of the claimed invention. For example, ¶ [0050] discusses that tone 2 can be modeled as low-high (LH) or medium-high (MH), for example. Thus, a model wherein the final part of each syllable is assigned a categorical level of pitch associated with each of two temporal portions allows more ways to describe tone 2 than the single "rising" toneme of Chen.

On page 5, the Office Action states the following in support of the obviousness rejection: "The contour consist of different level or values with respect to time... as the pitch varies over the duration of the syllable the use of categorical levels for each portion vary based on the identified tone. For example, rising tone goes from a low to a high value (two categorical levels)." The Applicant respectfully submits that this reasoning relies on the teachings of the present disclosure rather than the teachings of the prior art. Referring again to Applicant's FIG. 5, Chen teaches that a pitch contour describes the pitch, which is a measurable quantity and varies with respect to time.

Four of the five pitch contours recognized in Mandarin Chinese are illustrated in FIG. 5 as tones 1 through 4. Each of these contours is a continuous line or curve. There is no suggestion in Chen or the prior art to break up a final part of a syllable into different time-wise portions, and assign to each of those portions a discrete categorical level of pitch, as claimed. Even if one were to be decompose a pitch contour into different temporal portions, for most of these tones, the pitch would be changing within each of these portions, as described by the slope or tangent of the line or curve. Thus, even within a small span in time, the pitch is constantly changing. It is only the applicant's disclosure that teaches representing this constantly changing pitch by a proxy that is an unchanging, constant, discrete categorical level value. Accordingly, the association of a discrete categorical level associated with each of these temporal portions is taught by the present application and would not have been suggested by the prior art. Thus, Chen does not teach a system where a syllable is modeled having a final part comprising first and second portions, wherein each portion has a categorical pitch level associated with it, as claimed in independent claim 1. Huang does not add any disclosure that remedies this deficiency in Chen. Accordingly, the Applicant respectfully submits that independent claim 1 is not rendered obvious by the combination of Chen and Huang.

Further, as to claims 6, 14 and 33, the Office Action at page 5 states that Chen "teaches wherein the different levels of pitch comprises five categorical levels (see col. 4, lines 33-35, five types of tones), and wherein each portion has a categorical level associated with it (see col. 4, lines 10-15, pitch varies with time and represents a

pitch contour. The contour consist of different level or values with respect to time)." The Applicant respectfully submits that the categorical levels are not analogous to Chen's five tone types. As described in ¶[0058] of the present application, using five categorical levels with the five Mandarin Chinese tones, tone 4 could be represented by, for example, "5-1, 5-2 or 4-1," for example. Thus, the five categorical levels are clearly distinguishable from the five tone types of Chen. Moreover, even if the five tones of Chen were read to meet the limitation of the five categorical levels, it would not satisfy the feature of the first and second portions of the final part of the syllable each having a categorical level associated with it. That is because each of the tone types of Chen describes the tone for the entire syllable. (Chen, column 4, lines 8-13).

In view of the foregoing remarks, the Applicant respectfully submits that independent claims 1 and 29 are not rendered obvious by the combination of Chen and Huang. Dependent claim 4 has been cancelled, as its subject matter is now incorporated into amended independent claim 1. Similarly, dependent claim 33 is cancelled, as its subject matter is now incorporated into amended independent claim 29. Dependent claims 6, 9, 12, 14 and 17 include the limitations of independent claim 1. Thus, for at least the reasons set forth above, the dependent claims are also not rendered obvious by the combination of Chen and Huang. Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 1, 6, 9, 12, 14, 17 and 29 under 35 USC § 103(a).

On page 6 of the Office Action, claims 5 and 13 were rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang, and further in view of Akinlabi

et al., "Tonal Phonology of Yoruba Clitics." Claims 5 and 13 depend from independent claim 1, discussed with respect to the combination of Chen and Huang above. The Applicant respectfully submits that Akinlabi does not add any disclosure that, in combination with Chen and Huang, renders obvious each element of independent claim 1, discussed above. Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 5 and 13 under 35 USC § 103(a).

On page 7 of the Office Action, claims 18 and 19 were rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang and further in view of Chen 2, "Recognize Tone Languages Using Pitch Information on the Main Vowel of Each Syllable." Claims 18 and 19 each depend from independent claim 1, discussed with respect to the combination of Chen and Huang. Chen 2 does not add any disclosure that, in combination with Chen and Huang, renders obvious each element of independent claim 1, discussed above. Accordingly, the Applicant respectfully requests withdrawal of the rejection of claims 18 and 19 under 35 USC § 103(a).

On page 7 of the Office Action, claims 20, 21, 23 and 24 were rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang. Independent claim 20 recites a system wherein the final parts of a syllable is modeled comprising "a first phone corresponding to a first relative pitch and a second phone corresponding to a second relative pitch; and wherein the different levels of pitch comprise at least two categorical levels, and wherein each phone has a categorical level associated with it." This feature has been discussed above with respect to independent claims 1 and 29 and the Chen and Huang references. Accordingly, the same arguments presented above with respect to independent claims 1 and 29 are applicable here to

independent claim 20. In view thereof, the Applicant respectfully submits that independent claim 20 is not rendered obvious by the combination of Chen and Huang. Dependent claims 21, 23 and 24 include the limitations of independent claim 20. Accordingly, for at least the reasons cited above, the Applicant respectfully submits that these claims are also not rendered obvious by the prior art. Thus, the Applicant respectfully requests withdrawal of the rejection of claims 20, 21, 23 and 24 under 35 USC § 103(a).

On page 10 of the Office Action, claim 22 was rejected under 35 USC § 103(a) as being unpatentable over Chen in view of Huang and further in view of Akinlabi. Independent claim 20 has been discussed with reference to Chen and Huang above. Akinlabi does not add any disclosure that, in combination with Chen and Huang, renders obvious each feature of independent claim 20. Accordingly, the Applicant respectfully submits dependent claim 22 is not rendered obvious by the prior art. Thus, the Applicant respectfully requests the withdrawal of the rejection of claim 22 under 35 USC § 103(a).

The foregoing remarks are intended to assist the Office in examining the application and in the course of explanation may employ shortened or more specific or variant descriptions of some of the claim language. Such descriptions are not intended to limit the scope of the claims; the actual claim language should be considered in each case. Furthermore, the remarks are not to be considered exhaustive of the facets of the invention which are rendered patentable, being only examples of certain advantageous features and differences, which applicant's attorney chooses to mention at this time. For the foregoing reasons, applicant reserves the right to submit additional

evidence showing the distinction between applicant's invention to be unobvious in view of the prior art.

Furthermore, in commenting on the references and in order to facilitate a better understanding of the differences that are expressed in the claims, certain details of distinction between the same and the present invention have been mentioned, even though such differences do not appear in all of the claims. It is not intended by mentioning any such unclaimed distinctions to create any implied limitations in the claims.

An extension of time for consideration of this response is respectfully requested. An online charge authorization for the extension of time fee is included herewith.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

WESTMAN, CHAMPLIN & KELLY, P.A.

By: 

Steven M. Koehler, Reg. No. 36,188
900 Second Avenue South, Suite 1400
Minneapolis, Minnesota 55402
Phone: (612) 334-3222 Fax: (612) 334-3312

SMK:MDL:mek